fire hazard, but their initial cost renders that form of construction almost prohibitive.

Besides actually impeding traffic, snow is sometimes a costly factor in operation in that it occasionally causes destructive slides. These slides not only sweep away the snowsheds but sometimes occur during the passage of a train, with resultant disaster. On January 22, 1916, a snowslide struck an all-steel passenger train near Corea, Washington, cutting it in two, and sweeping several coaches into a ravine 120 feet below, with resultant loss of several lives. In order to combat the hazard of snowslides the U. S. Weather Bureau has studied the conditions under which they occur. During the season when there is danger from such slides, warnings are issued to proceed cautiously, and in some instances train dispatchers have stopped the movement of trains until the danger has passed.

While the recurring snows of winter are a great benefit to agriculture, both as a source of moisture and as a protective blanket to submerged vegetation, they are a costly impediment to railway transportation. In severe winters, like that of 1917–18, the delay to transportation caused by excessive snowfall sometimes affects business in general. Occasionally it causes real peril, through the delay resulting in the delivery of food and fuel. Automobile trucks are already an important factor in the transportation of freight and express matter between adjacent cities and towns. These too are impeded by deep snow to such an extent that service must occasionally be abandoned for brief intervals during the winter half-year.

In an article entitled, "Millions Saved on Mild Winter,"[3] published in the New York Times, April 6, 1919 (sec. 2, p. 2), it is stated that in an average winter the cost to the railroads of the United States for removing snow and ice from the tracks is between $5,000,000 and $6,000,000. In a severe winter it may cost much more. For example, in the remarkable winter of 1917–18 the cost was between $7,000,000 and $8,000,000. In a mild winter the cost may be much below the average. An eastern railroad official estimated that in a mild winter the cost may be 25 per cent below the average figures given above, while in an extremely mild winter, like that of 1918–19, there may be a saving of fully 50 per cent of the figures given.

While a heavy snowfall adds greatly to the cost of maintenance of way, it also causes loss through interrupting the flow of freight, and eventually to business and industry in general. Furthermore, when coal arrives at its destination solidly frozen in cars which have to be thawed out, further delay and increased costs are unavoidable. For these reasons the general character of a winter is often reflected by the cost of operation figures appearing in the reports of the railroads of the northern portion of the United States.

[3] Abstract of this article appears in MONTHLY WEATHER REVIEW, vol. 47, March, 1919, p. 170-171.

SNOWFALL AND SNOW COVER ON THE ST. BERNARD ROAD (ENTREMONT VALLEY) IN WALLIS, FROM 1904 TO 1913.

By P. L. MERCANTON.

(Abstracted from Meteorologische Zeitschrift, Nov.-Dec., 1918, pp. 269-272.)

By means of measures made during the winters from 1904 to 1913, by postal-service men and others passing along the road, it has been possible to obtain mean values of the snowfall and snow cover during the winter months. These measures were made at the first and the middle of the months, by noting the snow depth on graduated telegraph poles along the road. The following table is presented:

STATION OF ORSIERES (alt. 970 meters).

	Nov. 1.	Dec. 1.	Jan. 1.	Feb. 1.	Mar. 1.	Apr. 1.	May 1.	June 1.
	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.
Snowfall during previous month...	3	11	23	25	25	12	1	3
Snowfall since beginning of winter.	3	14	37	62	87	99	100	103
Snow cover, total.....	.....	10	13	14	18	1	0	0
Snow cover, monthly increase.....	.....	.....	+3	+1	+4	−17	−1	.....

STATION OF ST. PIERRE (alt. 1,630 meters).

Snowfall during previous month...	25	34	53	43	50	62	20	22
Snowfall since beginning of winter.	26	60	113	156	206	268	288	310
Snow cover, total.....	.....	28	27	31	52	28	0	0
Snow cover, monthly increase.....	.....	.....	+4	+4	+21	−24	−28	.....

STATION OF GREAT ST. BERNARD (alt. 2,230 meters).

Snowfall during previous month...	88	155	191	119	120	158	98	72
Snowfall since beginning of winter.	115	270	461	580	700	858	956	1,028
Snow cover, total.....	39	46	66	100	166	197	169	75
Snow cover, monthly increase.....	.....	+17	+20	+34	+66	+31	−37	−85

These figures show the maximum fall to be during December and January; the greatest depth of snow cover to be during March and April; the greatest increase of depth of snow cover during February. After the maximum depth is attained, however, it decreases rapdly during May and June. Naturally, the higher stations show greater intensities of snow, in respect to depth and amount.—*C. L. M.*

SNOW IN THE FRENCH ALPS.

By M. E. BENEVENT.

Abstract reprinted from Geogr. Review, April, 1919, p. 273. Article in Recueil des Trav. de l' Inst. de Geogr. Alpine, vol. 5, 1917, No. 4, pp. 403-497.]

The regimen of the snowfall is discussed in respect of quantity, frequency of precipitation, and duration of snow cover. In conclusion these factors are analyzed in their combined effect on human relation. The region naturally falls into two main subdivisions—the Northern Alps, whose precipitation is controlled by oceanic influence, and the Southern Alps, controlled by Mediterranean influence.

SNOW CONDITIONS AT GENEVA IN THE 60 YEARS 1857 TO 1917.

By RAOUL GAUTIER.

[From abstract by J. V. Hann, Meteorologische Zeitschrift, Jan.-Feb., 1918, pp. 44-46.]

This investigation concerns itself with the average depth of snow, the number of days of snow, and the length of time the snow remained on the ground. Of the mean for 60 years, we have for the average depth of snow, 42.4 cm.; for the average number of days of snowfall per year, 8.2; for the length of time of snow on the ground, 17.2 days. The maxima for these values, however, are 172 cm., 30 days, and 86 days, respectively. The exceptional years and unusual instances of snowfall are discussed in the latter part of the article.—*C. L. M.*